800' 0 800'

APPROXIMATE SCALE: 1" = 800'

environmental services
ES Engineering Services, LLC
1 Park Plaza #1000 · Irvine, CA 92614 · (714) 919-6500

N

FIGURE 1

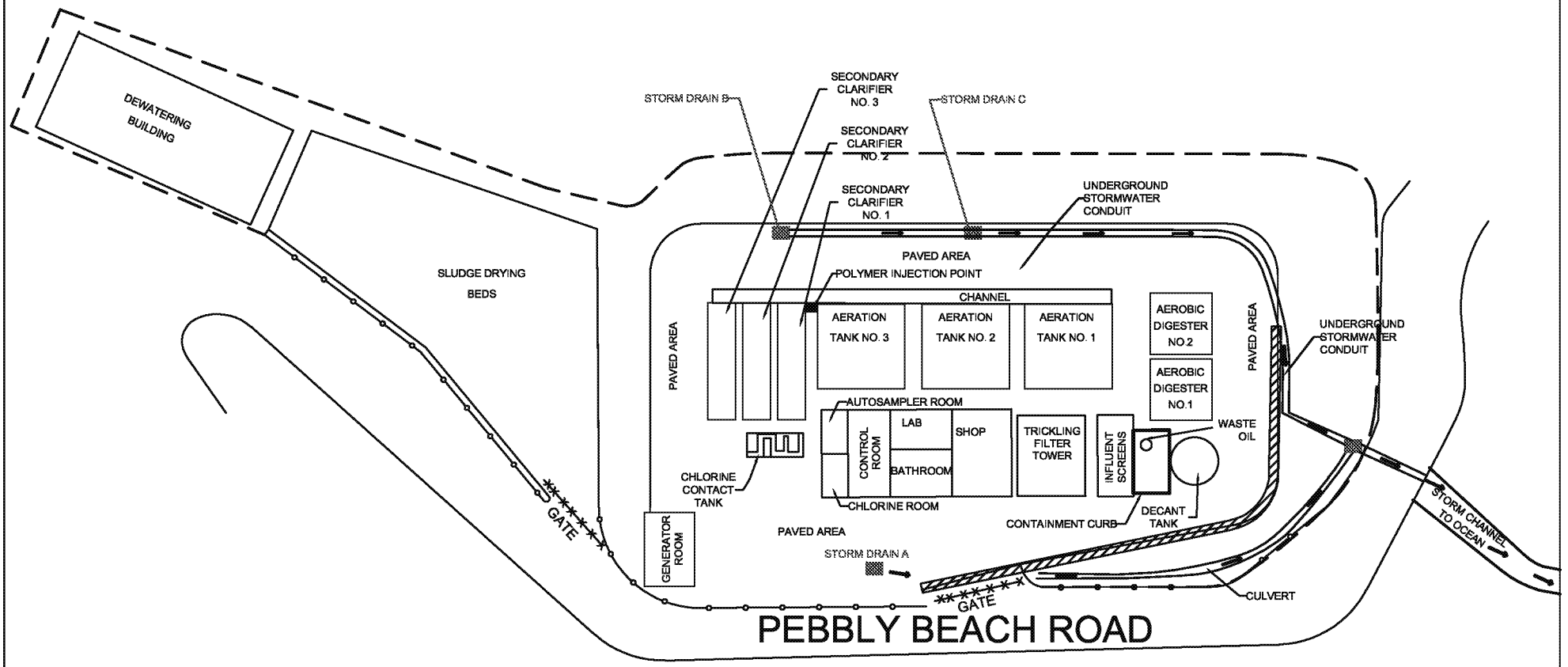
AVALON WASTEWATER TREATMENT FACILITY SITE LOCATION MAP

DATE 06/29/2018

PROJECT NO.

FILE NO.

S:\Avalon WWTP\SWPPP 2018\CAD\Avalon Site Plan-LT verson (For SWPP) 20170201 - Standard\Avalon Site Plan-LT verson (For SWPP) 20170201.dwg



LEGEND

- Berm
- Storm Drain
- Flow Direction

N

60 0 60

APPROXIMATE SCALE: 1" = 60'

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FIGURE 2

AVALON WASTEWATER TREATMENT FACILITY SITE MAP

DATE 06/29/2018

PROJECT NO.

FILE NO.

TABLES

TABLE 1

AVALON WASTEATER TREATMENT FACILITY
STORM WATER POLLUTION PREVENTION TEAM (PPT)

Name	Title	Duties
Van Madding	Plant Manager	1p, 2p, 3p, 4p, 5p, 6p, 7p, 8p, 9a, 10a, 11p, 12p, 13p
Bruce Bonner	Lead Operator	1a, 2a, 3a, 4a, 6a, 7a, 12a, 13a, 14p
Margaret Patrick	Senior Geologist/QISP	5p, 8a, 9p, 10p

p = primarily responsible a = alternatively responsible

1. Assign resources and manpower to the Pollution Prevention Team (PPT).
2. Conduct materials inventory.
3. Identify potential spill sources.
4. Establish spill reporting procedures.
5. Prepare visual inspection programs.
6. Direct spill response and cleanup.
7. Coordinate employees in implementing goals of the SWPPP.
8. Establish employee training programs.
9. Implement, review and update the SWPPP.
10. Conduct meetings and/or training regarding the SWPPP.
11. Oversee storm water monitoring employees.
12. Perform storm water monitoring and inspections.
13. Ensure PPT members are available when regularly assigned members are temporarily unavailable.
14. Inspect, service, and/or replace any storm water BMPs such as filters, socks, etc.

TABLE 2

AVALON WASTEATER TREATMENT FACILITY
LIST OF SIGNIFICANT MATERIALS

Material	Maximum On-site Storage Quantity	Storage Method	Storage & Handling Location	Receiving & Shipping Location	Approximate Shipping Frequency
Centrifuge polymer	220 gallons	4 x 55-gallon drums on spill containment carts	In building where drains recycle back into the process	The Shop	Delivered as needed
Clarifier polymer	165 gallons	3 x 55-gallon drums on spill containment carts	Over process channel near Clarifiers	The Shop	Delivered as needed
Chlorine	55 gallons	55-gallon drum	Chlorine Room and Chlorine Contact Tank	The Shop	Delivered as needed
Used Oil	55 gallons	55-gallon steel drums on spill containment carts	In the Shop	The Shop	Removed from site for recycling within 180 days
Dewatered Sewage Sludge	5 to 20 tons per month (amount affected by tourist season)	After drying it is placed in bins to be transported to landfill	Sludge drying bed	Sludge drying bed	Taken to landfill once it is dewatered to less than 50%
Oils/ Lubricant	10 gallons	5-gallon buckets	In the Shop	The Shop	Delivered as needed

AST = Aboveground storage tank MRF = Material Recovery Facility WWTP = Wastewater treatment plant

TABLE 3

ASSESSMENT OF POTENTIAL POLLUTANT SOURCES AND CORRESPONDING BEST MANAGEMENT PRACTICES AT THE AVALON WASTEATER TREATMENT FACILITY

Best Management Practices (BMPs) which apply to all areas of the site include:

1: Having a trained and knowledgeable Pollution Prevention Team (PPT) to coordinate and implement the SWPPP.
2: Performing training for appropriate employees in implementing facility controls, spill prevention and response, good housekeeping, appropriate hazardous material handling and storage, and other storm water pollution prevention practices.
3: Encouraging employees to identify conditions in site work areas that might potentially cause storm water pollution.
4: Conducting SWPPP and other routine site inspections.
5: Maintaining SWPPP records including inspections, training, sampling results, annual site evaluations, annual reports, and incident reports (if applicable).
6: Maintaining accurate records of materials and wastes used and stored at the site with Safety Data Sheets (SDS), manifests, and proper container labeling.
7: Performing Quality Assurance by reviewing SWPPP, storm water data, and inspections and making BMP improvements as necessary.

Area	Activity	Pollutant Source	Pollutant	Best Management Practices
Headworks	Rotating screens to remove debris	Particles from rotating screens	TSS	Maintain equipment to prevent break downs. Inspect and perform ongoing removal of debris. Train employees to watch for spills and overflows, and clean them up ASAP.
Aeration Tanks	Tanks aerating water	wastewater	TSS and pH	Inspect the area regularly and check tanks and equipment for leaks. Inspect and prevent overflows. Inspect the containment area and ensure water collected at the sump is recycled back into treatment plant.
Clarifier & Centrifuge Polymer Areas	Addition of polymers to treat water	polymers and wastewater	TSS, pH, and polymers	Perform preventative equipment inspections and maintenance regularly. Clean any spills, drips, and waste fluids off paved surfaces ASAP using dry clean-up methods whenever possible. Keep polymer drums securely stored with spill containment. Regularly inspect drums and hoses/lines for leaks and degradation. Keep spill kits nearby with absorbent materials. Ensure that loading/unloading of drums is done by a trained forklift operator and that employees responsible for accepting deliveries inspect for leaks or spills and clean them up promptly. Follow site spill prevention and response procedures for material spills. Use proper disposal procedures for removal of used rags and absorbent materials (with manifest documentation where appropriate).

TABLE 3

ASSESSMENT OF POTENTIAL POLLUTANT SOURCES AND CORRESPONDING BEST MANAGEMENT PRACTICES AT THE AVALON WASTEATER TREATMENT FACILITY

Area	Activity	Pollutant Source	Pollutant	Best Management Practices
Final Clarifiers	Wastewater solids separation	polymers and wastewater	TSS, pH, and polymers	Follow spill response procedures when there is a polymer leak. Inspect and service equipment and area regularly to prevent overflows. Train employees to watch for spills & drips and clean up ASAP. Keep spill kits nearby.
Chlorine Tank and Room	Chlorine storage and addition to wastewater	chlorine and wastewater	pH, TSS, and chlorine	Perform preventative equipment inspections and maintenance regularly. Clean any spills or drips off paved surfaces ASAP. Keep chlorine drums securely stored with spill containment. Regularly inspect drums and hoses/lines for leaks and degradation. Keep spill kits nearby with absorbent materials. Ensure that loading/unloading of drums is done by a trained forklift operator and that employees responsible for accepting deliveries inspect for leaks or spills and clean them up promptly. Follow site spill prevention and response procedures for chlorine spills. Use proper disposal procedures for removal of used rags and absorbent materials (with manifest
Thickener Tank	Separating thickened waste sludge from the clarifiers	Waste sludge and wastewater	TSS	Inspect the area regularly and check tank and equipment for leaks. Inspect and prevent overflows or clogging.
Aerobic Digester Tanks	Digesting activated sludge	Sludge and wastewater	TSS and pH	Inspect the area regularly and check tanks and equipment for leaks. Inspect and prevent overflows or clogging.
Sludge Drying Beds	Spreading and drying of treated sludge	Sludge and oily drips from Bobcat	Oil & Grease and TSS	Inspect area and clean pavement as needed. Keep sludge from being tracked out of the containment area and offsite by the bobcat.
Paved Parking/Traffic Areas	Parking and traffic	Oily drips and dirt	Oil & Grease and TSS	Inspect pavement and pick up dirt, litter, and oily drips using absorbent and dry sweeping methods. Inspect & perform regular maintenance on Trucks and Equipment to prevent oil leaks. Use fiber rolls around storm drains to prevent sediment from getting in.

TABLE 3

ASSESSMENT OF POTENTIAL POLLUTANT SOURCES AND CORRESPONDING BEST MANAGEMENT PRACTICES AT THE AVALON WASTEATER TREATMENT FACILITY

Area	Activity	Pollutant Source	Pollutant	Best Management Practices
The Shop and Dewatering Building	Minor maintenance of equipment and storage of maintenance fluids	Small amounts of oils, solvents, and maintenance materials	Oil & Grease and pH	Inspect pavement and pick up dirt, litter, and oily drips using absorbent and dry sweeping methods. Keep flammable materials in fire rated cabinets and away from potential ignition sources. Keep drip pans available to place under leaking trucks or equipment and have spill kits available.
Waste Oil Storage Area	Transfer and storage of waste oil	Oil	Oil & Grease	Inspect pavement and pick up oily drips using absorbent and dry sweeping methods. Have spill kits available and keep oil securely in secondary containment. Remove used oil from site regularly and have it treated at licensed facilities in accordance with regulations.

TABLE 4

AVALON WASTEATER TREATMENT FACILITY
SAMPLING PARAMETERS AND NUMERIC ACTION LEVELS (NALs)

Parameters	Sample Bottle[2]	Test Method[3]	Reporting Limit[4]	Annual NAL[5]	Instantaneous Maximum NAL[5]
pH[1]	0.5 L HDPE unpreserved	Grab	0.01 pH Units	N/A	<6.0 or >9.0
Total Suspended Solids (TSS)	1 L HDPE unpreserved	SM 2540D	1.0 mg/L	100 mg/L	400 mg/L
Oil & Grease (O&G)	1 L Amber glass with H_2SO_4	1664A HEM	1.0 mg/L	15 mg/L	25 mg/L

L = liter mg/L = miligrams per liter HDPE = High density polyethylene H_2SO_4 = sulfuric acid

1 - pH holding time is 15 minutes, therefore it should be measured immediately using wide range litmus pH paper if the facility is in Baseline Status for pH, or a 3-point calibrated pH meter if the facility is a Level 1 or Level 2 Status, or subject to the Subchapter N ELGs (Effluent Limitations Guidelines).

2 - The bottle size and type may vary slightly depending on the analytical laboratory.

3 - The Method Listed is from Table 2 of the Industrial General Permit (Order 2014-0057-DWQ). SM = Standard Methods for the Examination of Water and Wastewater, latest Edition. EPA = United States Environmental Protection Agency test methods.

4 - Reporting Limit is based on the Method Detection Limit (MDL) and can vary according to the analysis method, laboratory equipment, laboratory quality assurance/quality control (QA/QC) protocols and the storm water sample itself.

5 - Annual Average Numeric Action Levels (NALs) and Instantaneous Maximum NALs listed on Table 2 of the Industrial General Permit (Order 2014-0057-DWQ.)

APPENDIX A

Copy of General Storm Water Permit
Order No. 2014-0057-DWQ

APPENDIX A

National Pollutant Discharge Elimination System (NPDES)

General Permit For
Storm Water Discharges
Associated With Industrial Activities

Order
NPDES No. CAS000001

NOTE: A full copy of the new *General Permit for Storm Water Discharges Associated with Industrial Activities*, otherwise known as the *Industrial General Permit* (IGP), Order No. 2014-0057-DWQ effective July 1st, 2015 is included in Appendix A of the copy of the Storm Water Pollution Prevention Plan & Monitoring Implementation Plan (SWPPP/MIP) kept at the site. It can also be downloaded online at www.swrcb.ca.gov.

ES ENGINEERING SERVICES

APPENDIX B

Receipt of Notice of Intent

February 01, 2017

Van Madding
ES Engineering Inc
1036 W Taft Ave
Orange, CA 92865

Facility Info: Avalon WWTP
123 Pebbly Beach Rd
Avalon, CA 92618
SIC Code(s): 4952

Waste Discharge Identification Number: 4 19I023146

Date Processed: May 10, 2011

RECEIPT OF YOUR NOTICE OF INTENT (NOI)

The State Water Resources Control Board (State Water Board) received and processed the NOI to comply with the terms of the General Permit for Storm Water Discharges Associated with Industrial Activity Order 2014-0057-DWQ.

Waste Discharger Identification (WDID) number 4 19I023146 is assigned to the facility referenced above.

Accordingly, you are required to comply with all applicable permit requirements.

Notice of Termination (NOT) is required to be submitted to the State Water Board should the owner or operator of the facility change or upon closure of the facility. Until an NOT is submitted you will continue and are responsible to pay the annual fee invoiced each April.

If you have any further questions, please contact your local Regional Water Board at 213-576-6600.

Please visit the storm water web page at www.waterboards.ca.gov/water_issues/programs/stormwater/industrial.shtml for storm water related information.

Sincerely,
Storm Water Program
Division of Water Quality

APPENDIX C

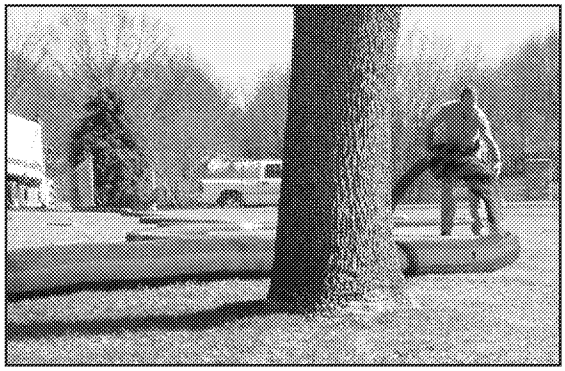
Additional Documentation

Filtrexx® Sediment Control

Sediment & Perimeter Control Technology

PURPOSE & DESCRIPTION

Filtrexx® Sediment control is a three-dimensional tubular sediment control and storm water runoff filtration device typically used for **perimeter control** of sediment and soluble pollutants (such as phosphorus and petroleum hydrocarbons), on and around construction activities. Filtrexx® Sediment control traps sediment and soluble pollutants by *filtering* runoff water as it passes through the matrix of the Sediment control *and* by allowing water to temporarily pond behind the Sediment control, allowing *deposition* of suspended solids. Sediment control is also used to reduce runoff flow velocities on sloped surfaces.



Installation Method – Perimeter Control

APPLICATION

Filtrexx® Sediment control is to be installed down slope of any disturbed area requiring erosion and sediment control and filtration of soluble pollutants from runoff. Sediment control is effective when installed perpendicular to sheet or low concentrated flow, and in areas that silt fence is normally considered appropriate. Acceptable applications include:

- Site perimeters
- Above and below disturbed areas subject to sheet runoff, interrill and rill erosion
- Above and below exposed and erodable slopes
- Along the toe of stream and channel banks
- Around area drains or inlets located in a 'sump'
- On compacted soils where trenching of silt fence is difficult or impossible
- Around sensitive trees where trenching of silt fence is not beneficial for tree survival or may unnecessarily disturb established vegetation.
- On frozen ground where trenching of silt fence is impossible.
- On paved surfaces where trenching of silt fence is impossible.

Sediment control can be applied to areas of high sheet runoff and erosion, on slopes up to a 1:1 grade (should be used in conjunction with slope stabilization/erosion control technology on slopes > 4:1), around inlets, and in other disturbed areas of construction sites requiring sediment control. Sediment control may also be used in sensitive environmental areas, where migration of wildlife may be impeded by the use of fences or trenching may damage roots.

It is possible to drive over Sediment control during construction (although not recommended), however, these areas should be immediately repaired by manually moving Sediment control back into place, if disturbed. Continued heavy construction traffic may destroy the fabric mesh, reduce the dimensions, and reduce the effectiveness of the Sediment control.

ADVANTAGES AND DISADVANTAGES

Advantages

- Tubular filtration matrix allows for better trapping and removal of sediment and soluble pollutants in storm water runoff compared to planar

constructed sediment control devices (i.e., silt fence).

- Greater surface area contact with soil than typical sediment control devices, reducing potential for runoff to create rills under the device leading to unfiltered sediment.
- No trenching is required; therefore soil is not disturbed upon installation or removal.
- Sediment control can be installed year-round in difficult soil conditions such as frozen or wet ground, and dense and compacted soils, as long as stakes can be driven.
- Sediment control is easily implemented as a treatment in a greater treatment train approach to erosion and sediment control.
- Organic matter and humus colloids in FilterMedia™ (filler material in Sediment control) have the ability to bind and adsorb phosphorus, metals, and hydrocarbons that may be in storm water runoff.
- Microorganisms in FilterMedia™ have the ability to degrade organic pollutants and cycle captured nutrients in storm water runoff.
- Soxx™ (the mesh netting containment system) allows Sediment control to be placed in areas of high sheet flow and low concentrated flow.
- Sediment control can be direct seeded at time of application to provide greater stability and filtration capability once vegetation is established.
- FilterMedia™ is organic and can be left on site after permanent stabilization is complete, to be used in landscape design and/or seeded and planted with permanent vegetation.
- FilterMedia™ improves existing soil structure if spread out and used as a soil amendment after construction activity is complete.
- Biodegradable or photodegradable Sediment control can be left on site after construction activity eliminating the need for removal and labor and disposal costs.
- Sediment control can be used on slopes to slow down runoff velocity, disperse concentrated runoff, and reduce effective slope lengths, reducing the erosive potential of stormwater runoff.
- Sediment control is less likely to obstruct wildlife movement and migration than planar/silt fence sediment control practices.
- Sediment control is available in 8 in.(200mm), 12 in. (300mm), 18 in. (450mm), 24 in. (600mm), and 32 in (800mm) diameters for customized applications and challenging situations.
- Sediment control is available in 200 ft (61m). continuous lengths to prevent weak sections and creation of concentrated flow situations typical to low points in runs of other sediment control devices. End points are sleeved together to form continuous runs of unlimited lengths without low or break points.
- Sediment control may assist in qualification for LEED® Green Building Rating and Certification credits under LEED® New Construction 2.2. Awarded credits may be possible from SS Prerequisite 1, SS Credit 5.1, SS Credit 6.2, WE Credit 2, MR Credit 4.1, MR Credit 4.2, MR Credit 5.1, MR Credit 5.2, and MR Credit 6. *Note: LEED® is an independent program offered through the US Green Building Council. LEED® credits are determined on a per project basis by an independent auditing committee. Filtrexx® neither guarantees nor assures LEED® credits from the use of its products.*

ADVANTAGES			
	LOW	MED	HIGH
Installation Difficulty	✓		
Durability			✓
Sediment Control			✓
Soluble Pollutant Control		✓	
Runoff Flow Control		✓	
Life Cycle Cost	✓		

Disadvantages

- If filler material of Sediment control is not Certified FilterMedia™, performance may be diminished.
- If not installed correctly, maintained or used for a purpose or intention that does not meet specifications performance may be diminished.
- If land surface is extremely bumpy, rocky, or changes elevation abruptly ground surface contact to Sediment control may be diminished thereby adversely effecting performance.

MATERIAL SPECIFICATIONS

Sediment control use only photodegradable or biodegradable Soxx™ netting materials available from Filtrexx® International, LLC and are the only mesh materials accepted in creating Sediment control for any purpose. For Soxx™ tubular mesh material specifications see Table 1.1.

FILTERMEDIA™ CHARACTERISTICS

Specifications for Sediment control use only Certified Filtrexx® FilterMedia™ which is a coarse composted material that is specifically designed for removal of solids and soluble pollutants from storm water runoff. FilterMedia™ can be altered or customized to target specific pollutants in runoff as approved by the Engineer or Filtrexx® International. All Certified Filtrexx® FilterMedia™ has been third party tested and certified to meet minimum performance criteria defined by Filtrexx® International. Performance parameters include: hydraulic flow through rate, total solids removal efficiency, total suspended solids removal efficiency, turbidity reduction, nutrient removal efficiency, metals removal efficiency, and motor oil removal efficiency. For information on the physical and chemical properties of Certified FilterMedia™ refer to Certified FilterMedia™ Specifications in Appendix 5.25. Look for the Filtrexx® Certified™ FilterMedia™ Seal from our international network of Filtrexx® Certified™ Installers.

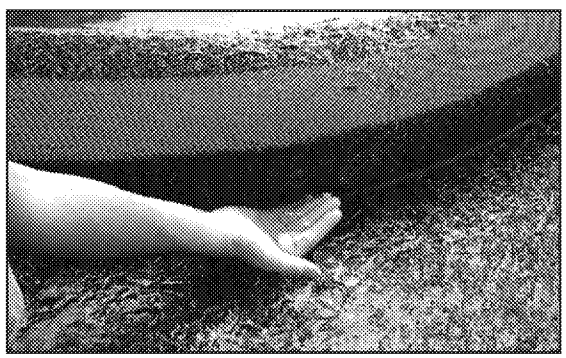
PERFORMANCE

Performance testing and research on Sediment control has been extensive. Results from testing and research programs conducted on Sediment control include: hydraulic flow through rate, ponding rate and calculation (behind Sediment control), sediment storage capacity (inside + behind tool), total solids removal efficiency, suspended solids removal efficiency (with and w/out biopolymer and polymer flocculants), turbidity reduction (with and w/out biopolymer and polymer flocculants), nitrate-N removal efficiency, total P removal efficiency, soluble reactive P removal efficiency (with and w/out Nutrient Agent), petroleum hydrocarbon (motor oil) removal efficiency, and heavy metals (Cu, Fe, Mn, Zn) removal efficiency. For a summary of performance testing, research results, and design specifications see Table 1.1 and Table 1.2. For copies of full reports contact Filtrexx® International, LLC.

Successful bidders will furnish adequate research support showing their manufactured product meets or exceeds performance and design criteria outlined in this standard specification. Research or performance testing will be accepted if it meets the following criteria: conducted by a neutral third party, utilizes standard test methods reported by ASTM or referenced in a peer reviewed scientific journal, product and control treatments are tested in triplicate, performance results are reported for product and control (control should be a bare soil under the same set of environmental and experimental conditions), results are peer reviewed, results indicate a minimum 60% TSS removal efficiency and a minimum hydraulic flow through rate of 5 gpm/ft^2. Bidders shall attach a copy of the research report indicating test methodologies utilized and results.
Note: the Contractor is responsible for establishing a working erosion and sediment control system and may, with approval of the Engineer, work outside the minimum construction requirements as needed. Where the Sediment control deteriorates or fails, it shall be repaired or replaced with an effective alternative.

DESIGN CRITERIA

The sediment and pollutant removal process characteristic to Sediment control combines both filtering and deposition from settling solids. This is different than methods that rely on ponding for deposition of solids for sediment control (i.e., silt fence). Ponding occurs when water flowing to the Sediment control accumulates faster than the hydraulic flow through rate of the Sediment control. Typically, hydraulic flow-through rates for Sediment control are 50% greater than geotextile filter fabric (silt fence). *Greater hydraulic flow-through rates reduce ponding, therefore reducing the need for taller sediment control structural design height.* Additionally, Sediment control does not blind as easily with small soil/sediment colloids, such as clay soils, as do



Filtering Water

planar geotextile sediment control barriers (such as silt fence). However, installation and maintenance is especially important for proper function and performance. For engineering design details see Figure 1.1. For a summary of specifications for product/practice use, performance and design see Table 1.1 and Table 1.2.

For most standard perimeter control applications, a 12 in (300mm) diameter Sediment control can replace a 24 to 36 in (600 to 900mm) silt fence. See Table 1.3 and 1.4 and Figure 1.2 for standard design specifications for maximum allowable slope lengths. Note: In some low flow conditions, an 8 in (200mm) Sediment control may replace a 24 in (600mm) silt fence. Design consideration should be given to the duration of the project, total area of disturbance, rainfall/runoff potential, soil erosion potential, and sediment loading.

Runoff Flow:
Sheet runoff flow and ponding depth should not exceed the height of the Sediment control. If overflow of the device is a possibility, larger diameter Sediment control should be constructed, other sediment control devices may be used, or management practices to reduce runoff should be installed. Alternatively, a second Sediment control may be constructed or used in combination with

Figure 1.3 Filtrexx® Sediment Control Design Tool for Sediment Control Applications.

Step 1: Choose units. ft or m		ft			
Step 2: Choose input: Tr or I		Tr			
total rainfall	inches	1.5	storm duration	hours: 24	
Step 3: Choose input: A or W		W			
width of area	ft	400.00	length of slope	ft: 250	43560
Step 4: Input slope	%	10			452.588
Step 5: Input reduction runoff percent	%	10			

		sediment control (8,12,16)	silt fence (24, 30)
Step 6: Input effective length of filter	ft	400	400
Step 7: Input diameter/height of filter	inches	12	36

Step 8: Find time to overflow filter and total flow/ft the filter can handle

Step 9: On figure find for given flow expected time to overflow filter

Part A. Evaluation of q_i

I inches/hr	A acres	s percent	Q gpm	L_{ss} ft	q_i gpm/ft
0.063	2.2957	10	58.15	400	0.145

Part B. Predicted time and total flow to top filter.

	q_o gpm/hr	D inches	Effective D inches	Time Overflow hr	Total Flow gal/f	Filter OKAY time > tr
Sediment control (Coarse Material)	0.145	12	9.6	99.1	865	OKAY
Silt Fence	0.145	36	30.6	97.5	851	OKAY

Use on Ecological Sensitive Sites

compost erosion control blankets or rolled erosion control blankets to slow runoff and reduce erosion. The Filtrexx® Design Tool™ can assist in planning and designing what diameter Sediment control should be used, correct spacing requirements, and what rainfall and site conditions can lead to runoff breaching of the Sediment control. For a copy of the Filtrexx® Design Tool™ contact Filtrexx® Technical Support at 440-926-2607.

Level Contour:
Sediment control should be placed on level contours to assist in dissipating low concentrated flow into sheet flow and reducing runoff flow velocity. Do not construct Sediment control to concentrate runoff or channel water. Sheet flow of water should be perpendicular to the Sediment control at impact and relatively un-concentrated. Placing Sediment control on undisturbed soil will reduce the potential for undermining.

Runoff and Sediment Accumulation:
Where possible, Sediment control should be placed at a 5 ft (1.5m) or greater distance away from the toe of the slope to allow for proper runoff accumulation for sediment deposition and to allow for maximum sediment storage capacity behind the device. If a 5 ft (1.5m) distance is not available, due to construction restrictions, a second Sediment control may be installed to increase ponding and sediment accumulation capacity. Steeper slopes allow less sediment storage behind the sediment control device and may require larger Sediment control or shorter slope lengths.

End Around Flow:
In order to prevent water flowing around the ends of Sediment control, the ends of the Sediment control must be constructed pointing upslope so the ends are at a higher elevation. A minimum of 10 linear ft (3m) per end each placed at a 30 degree angle is recommended.

Vegetated Sediment control :
For permanent areas Sediment control can be direct-seeded to allow vegetation established directly in the device, and may be expanded to 5 ft (1.5m) upslope and downslope from the device, for added performance. Vegetation on and around the Sediment control will assist in slowing runoff velocity for increased deposition and filtration of pollutants. The option of adding vegetation will be at the discretion of the Engineer. No additional soil amendments or fertilizer are required for vegetation establishment in the Sediment control.

Slope Spacing & Drainage Area:
Maximum drainage area to, and slope spacing between Sediment control is dependent on: rainfall intensity and duration used for specific design/plan, slope steepness, and width of area draining to the Sediment control. Refer to the Filtrexx® Design Tool™ (Filtrexx® Library #301) developed by The Ohio State University to accurately design a plan based on your site and climate conditions. See *Design Capacity Prediction Tool for SiltSoxx™ and Silt Fence* (Filtrexx® Library #3313) *and Flow-Through Rates and Evaluation of Solids Separation of Compost FilterMedia™ vs. Silt Fence in Sediment Control Applications* (Filtrexx® Library #104) for more information on the Design Tool or the research project and results used to create the tool. Figure 1.3 provides an example of the user interface for the Design Tool. For a free copy of the Design Tool contact Filtrexx® Technical Support. A specification for maximum slope lengths, based on a 1 in (25 mm)/24 hr rainfall event is provided in Table 1.3 and Figure 1.2; and for a 2 in (50 mm)/24 hr rainfall event is provided in Table 1.4.

INSTALLATION

1. Sediment control used for perimeter control of sediment and soluble pollutants in storm runoff shall meet Filtrexx® Soxx™ Material Specifications and use Certified Filtrexx® FilterMedia™.
2. Contractor is required to be a Filtrexx® Certified™ Installer as determined by Filtrexx® International, LLC (440-926-2607 or visit website at Filtrexx®.com). Certification shall be considered

current if appropriate identification is shown during time of bid or at time of application (current listing can be found at www.Filtrexx®.com). Look for the Filtrexx® Certified™ Installer Seal.

3. Sediment control will be placed at locations indicated on plans as directed by the Engineer.
4. Sediment control should be installed parallel to the base of the slope or other disturbed area. In extreme conditions (i.e., 2:1 slopes), a second Sediment control shall be constructed at the top of the slope.
5. Stakes shall be installed through the middle of the Sediment control on 10 ft (3m) centers, using 2 in (50mm) by 2 in (50mm) by 3 ft (1m) wooden stakes. In the event staking is not possible, i.e., when Sediment control is used on pavement, heavy concrete blocks shall be used behind the Sediment control to help stabilize during rainfall/runoff events.
6. Staking depth for sand and silt loam soils shall be 12 in (300mm), and 8 in (200mm) for clay soils.
7. Loose compost may be backfilled along the upslope side of the Sediment control, filling the seam between the soil surface and the device, improving filtration and sediment retention.
8. If the Sediment control is to be left as a permanent filter or part of the natural landscape, it may be seeded at time of installation for establishment of permanent vegetation. The Engineer will specify seed requirements.
9. Filtrexx® Sediment control is not to be used in perennial, ephemeral, or intermittent streams. See design drawing schematic for correct Filtrexx® Sediment control installation (Figure 1.1).

INSPECTION

Routine inspection should be conducted within 24 hrs of a runoff event or as designated by the regulating authority. Sediment control should be regularly inspected to make sure they maintain their shape and are producing adequate hydraulic flow-through. If ponding becomes excessive, additional Sediment control may be required to reduce effective slope length or sediment removal may be necessary. Sediment control shall be inspected until area above has been permanently stabilized and construction activity has ceased.

MAINTENANCE

1. The Contractor shall maintain the Sediment control in a functional condition at all times and it shall be routinely inspected.
2. If the Sediment control has been damaged, it shall be repaired, or replaced if beyond repair.
3. The Contractor shall remove sediment at the base of the upslope side of the Sediment control when accumulation has reached 1/2 of the effective height of the Sediment control, or as directed by the Engineer. Alternatively, a new Sediment control can be placed on top of and slightly behind the original one creating more sediment storage capacity without soil disturbance.
4. Sediment control shall be maintained until disturbed area above the device has been permanently stabilized and construction activity has ceased.
5. The FilterMedia™ will be dispersed on site once disturbed area has been permanently stabilized, construction activity has ceased, or as determined by the Engineer.
6. For long-term sediment and pollution control applications, Sediment control can be seeded at the time of installation to create a vegetative filtering system for prolonged and increased filtration of sediment and soluble pollutants (contained vegetative filter strip). The appropriate seed mix shall be determined by the Engineer.

DISPOSAL/RECYCLING

Filtrexx® FilterMedia™ is a composted organic product recycled and manufactured from locally generated organic, natural, and biologically based materials. Once all soil has been stabilized and construction activity has been completed, the FilterMedia™ may be dispersed with a loader, rake, bulldozer or similar device and may be incorporated into the soil as an amendment or left on the soil surface to aid in permanent seeding or landscaping. Leaving the FilterMedia™ on site reduces removal and

Close Up of Sediment Control

disposal costs compared to other sediment control devices. The mesh netting material will be extracted from the FilterMedia™ and disposed of properly by the Contractor. The photodegradable mesh netting material (FilterSoxx™) will degrade in 2 to 5 years if left on site. Biodegradable mesh netting material is available and does not need to be extracted and disposed of, as it will completely decompose in approximately 6 to 12 months. Using biodegradable Sediment control completely eliminates the need and cost of removal and disposal.

METHOD OF MEASUREMENT

Bid items shall show measurement as 8 (200), 12 (300), 18 (450), 24 (600), 32 (800) inch (mm) diameter Filtrexx® Sediment control' per linear foot (or linear meter), installed.

Engineer shall notify Filtrexx® of location, description, and details of project prior to the bidding process so that Filtrexx® can provide design aid and technical support.

REFERENCES CITED & ADDITIONAL RESOURCES

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ADDITIONAL INFORMATION

For other references on this topic, including trade magazine and press coverage, visit the Filtrexx® Website at: http://www.filtrexx.com/resourcespress.htm
For research reports not included in the Appendix, visit: http://www.filtrexx.com/resourcesreports.htm

Filtrexx® International, LLC
Technical Support
35481 Grafton Eastern Road
Grafton, OH 44044
440-926-2607
440-926-4021 (fax)
Website: www.filtrexx.com
Email: info@filtrexx.com
See website or call for complete list of international installers

TABLES & FIGURES:

Table 1.1. Filtrexx® Soxx™ Material Specifications.

Material Type	3 mil HDPE	5 mil HDPE	5 mil HDPE	Multi-Filament Polypropylene (MFPP)	Multi-Filament Polypropylene SafteySoxx
Material Characteristic	Photodegradable	Photodegradable	Biodegradable	Photodegradable	Photodegradable
Design Diameters	5 in (125mm), 8 in (200mm), 12 in (300mm), 18 in (400mm)	5 in (125mm), 8 in (200mm), 12 in (300mm), 18 in (400mm), 24 in (600mm), 32 in (800mm)	8 in (200mm), 12 in (300mm), 18 in (400mm), 24 in (600mm), 32 in (800mm)	8 in (200mm), 12 in (300mm), 18 in (400mm), 24 in (600mm), 32 in (800mm)	8 in (200mm), 12 in (300mm), 18 in (400mm), 24 in (600mm), 32 in (800mm)
Mesh Opening	3/8 in (10mm)	3/8 in (10mm)	3/8 in (10mm)	3/8 in (10mm)	1/8 in (3mm)
Tensile Strength	ND	26 psi (1.83 kg/cm2)	26 psi (1.83 kg/cm2)	44 psi (3.09 kg/cm2)	202 psi (14.2 kg/cm2)*
% Original Strength from Ultraviolet Exposure (ASTM G-155)	23% at 1000 hr	23% at 1000 hr	ND	100% at 1000 hr	100% at 1000 hr
Functional Longevity/ Project Duration	6 mo-2 yr	9 mo-3 yr	6-12 months	1-4 yr	2-5 yr

* Tested at Texas Transportation Institute/Texas A&M University (ASTM 5035-95).

Table 1.2. Filtrexx® Sediment Control Performance and Design Specifications Summary.

Design Diameter / **Design & Performance**	**8 in (200mm)**	**12 in (300mm)**	**18 in (450mm)**	**24 in (600mm)**	**32 in (800mm)**	**Testing Lab/ Reference**	**Publication(s)**
Effective Height	6.5 in (160mm)	9.5 in (240mm)	14.5 in (360mm)	19 in (480mm)	26 in (650mm)	The Ohio State University, Ohio Agricultural Research and Development Center	Transactions of the American Society of Agricultural & Biological Engineers, 2006
Effective Circumference	25 in (630mm)	38 in (960mm)	57 in (1450mm)	75 in (1900mm)	100 in (2500mm)		
Density (when filled)	13 lbs/ft (20 kg/m)	32 lbs/ft (50 kg/m)	67 lbs/ft (100 kg/m)	133 lbs/ft (200 kg/m)	200 lbs/ft (300 kg/m)	Soil Control Lab, Inc	
Air Space	20%	20%	20%	20%	20%	Soil Control Lab, Inc	
Maximum continuous length	unlimited	unlimited	unlimited	unlimited	unlimited		
Staking Requirement	10 ft (3m)	10 ft (3m)	10 ft (3m)	10 ft (3m)	10 ft (3m)		
Maintenance Requirement (sediment accumulation removal at X height)	3.25 in (80mm)	4.75 in (120mm)	7.25 in (180mm)	9.5 in (240mm)	13 in (325mm)		

(continued on next page)

Table 1.2. Filtrexx® Sediment Control Performance and Design Specifications Summary. *(continued)*

Initial Maintenance Requirement based on Rainfall-Runoff*	22 in (55 cm); 1109 L/linear m	32 in (80 cm); 1388 L/linear m	42 in (105 cm); 1825 L/linear m	64 in (160 cm); 2776 L/linear m	86 in (215 cm); 3885 L/linear m	The University of Georgia & Auburn University	
Functional Longevity**	2 – 5 yr	2 – 5 yr	2 – 5 yr	2 – 5 yr	2 – 5 yr		
Maximum Slope Length (<2%)	600 ft (183m)	750 ft (229m)	1000 ft (305m)	1300 ft (396m)	1650 ft (500m)	The Ohio State University, Ohio Agricultural Research and Development Center	Filtrexx® Design Tool™, Filtrexx® Library #301, Filtrexx® Tech Link #3304 & #3311
Hydraulic Flow Through Rate	7.5 gpm/ft (94 L/min/m)	11.3 gpm/ft (141 L/min/m)	15.0 gpm/ft (188 L/min/m)	22.5 gpm/ft (281 L/min/m)	30.0 gpm/ft (374 L/min/m)	The Ohio State University, Ohio Agricultural Research and Development Center; University of Guelph, School of Engineering/ Watershed Research Group	Filtrexx® Tech Link #3311 & #3313, #3308; American Society of Agricultural & Biological Engineers Meeting Proceedings , 2006, Second Interagency Conference on Research in Watersheds, 2006
P Factor (RUSLE)	0.1-0.32	0.1-0.32	0.1-0.32	0.1-0.32	0.1-0.32	USDA ARS Environmental Quality Lab/University of Georgia	American Society of Agricultural & Biological Engineers Meeting Proceedings , 2006
Sediment Storage Capacity***	174 cu. in (2850cc)	396 cu. in (6490cc)	857 cu. in (14040cc)	1631 cu. in (26840cc)	2647 cu. in (43377 cc)		Filtrexx® Tech Link #3314
Total Solids Removal	98%	98%	98%	98%	98%	Soil Control Lab, Inc	International Erosion Control Association, 2006
Total Suspended Solids Removal	78%	78%	78%	78%	78%	USDA ARS Environmental Quality Lab	Filtrexx® Tech Link #3308; American Society of Agricultural & Biological Engineers Meeting Proceedings , 2006
Turbidity Reduction	63%	63%	63%	63%	63%	USDA ARS Environmental Quality Lab	Filtrexx® Tech Link #3308; American Society of Agricultural & Biological Engineers Meeting Proceedings , 2006
TSS Removal w/ PAM	97%	97%	97%	97%	97%	USDA ARS Environmental Quality Lab	Filtrexx® Tech Link #3308; American Society of Agricultural & Biological Engineers Meeting Proceedings , 2006
TSS Removal w/ Flocculent	97%	97%	97%	97%	97%	USDA ARS Environmental Quality Lab	Filtrexx® Tech Link #3308; American Society of Agricultural & Biological Engineers Meeting Proceedings , 2006

Table 1.2. Filtrexx® Sediment Control Performance and Design Specifications Summary. *(continued)*

Turbidity Reduction w/ PAM	98%	98%	98%	98%	98%	USDA ARS Environmental Quality Lab	Filtrexx® Tech Link #3308; American Society of Agricultural & Biological Engineers Meeting Proceedings , 2006
Turbidity Reduction w/ Flocculent	94%	94%	94%	94%	94%	USDA ARS Environmental Quality Lab	Filtrexx® Tech Link #3308; American Society of Agricultural & Biological Engineers Meeting Proceedings , 2006
Total Phosphorus Removal	34%	34%	34%	34%	34%	USDA ARS Environmental Quality Lab	Filtrexx® Tech Link #3308; American Society of Agricultural & Biological Engineers Meeting Proceedings , 2006
Reactive Phosphorus Removal	38%	38%	38%	38%	38%	USDA ARS Environmental Quality Lab	American Society of Agricultural & Biological Engineers Meeting Proceedings , 2006
Total Phosphorus Removal w/ Nutrient Agent	60%	60%	60%	60%	60%	USDA ARS Environmental Quality Lab	American Society of Agricultural & Biological Engineers Meeting Proceedings , 2006
Reactive Phosphorus Removal w/ Nutrient Agent	99%	99%	99%	99%	99%	USDA ARS Environmental Quality Lab	Filtrexx® Tech Link #3308; American Society of Agricultural & Biological Engineers Meeting Proceedings , 2006
Nitrate-N Removal	25%	25%	25%	25%	25%	USDA ARS Environmental Quality Lab	American Society of Agricultural & Biological Engineers Meeting Proceedings , 2006
Ammonium-N Removal	15%	15%	15%	15%	15%	USDA ARS Environmental Quality Lab	
Ammonium-N Removal w/ Nutrient Agent	33%	33%	33%	33%	33%	USDA ARS Environmental Quality Lab	
Motor Oil Removal	96%	96%	96%	96%	96%	Soil Control Lab, Inc	International Erosion Control Association, 2006
Diesel Fuel Removal	Testing in Progress	Testing in Progress	Testing in Progress	Testing in Progress	Testing in Progress	Soil Control Lab, Inc	
Gasoline Removal	Testing in Progress	Testing in Progress	Testing in Progress	Testing in Progress	Testing in Progress	Soil Control Lab, Inc	
Iron (Fe) Removal	22%	22%	22%	22%	22%	Soil Control Lab, Inc	
Zinc (Zn) Removal	9%	9%	9%	9%	9%	Soil Control Lab, Inc	
Manganese (Mn) Removal	8%	8%	8%	8%	8%	Soil Control Lab, Inc	

(continued on next page)

Table 1.2. Filtrexx® Sediment Control Performance and Design Specifications Summary. *(continued)*

Total coliform Removal^	67%	67%	67%	67%	67%	USDA ARS Environmental Quality Lab	
E. coli Removal^	67%	67%	67%	67%	67%	USDA ARS Environmental Quality Lab	
Enterococcus Removal^	47%	47%	47%	47%	47%	USDA ARS Environmental Quality Lab	
E. coli Removal w/ Bacteria Agent^	98%	98%	98%	98%	98%	USDA ARS Environmental Quality Lab	
Fecal coliform Removal w/ Bacteria Agent^	98%	98%	98%	98%	98%	USDA ARS Environmental Quality Lab	
Enterococcus Removal w/ Bacteria Agent^	91%	91%	91%	91%	91%	USDA ARS Environmental Quality Lab	
Clay (<0.002mm) Removal#	65%	65%	65%	65%	65%	USDA ARS Environmental Quality Lab	
Silt (0.002-0.05mm) Removal#	64%	64%	64%	64%	64%	USDA ARS Environmental Quality Lab	
Other Recommended Uses	Inlet Protection, Ditch Protection, Slope Interruption	Inlet Protection, Ditch Protection, Concrete Washout, Filtration System, Slope Interruption	Ditch Protection, Concrete Washout, Filtration System	Ditch Protection, Concrete Washout, Filtration System	Ditch Protection, Concrete Washout, Filtration System		

* Based on rainfall intensity of 12.5 cm (5 in)/hr applied to a bare clay loam soil at a 10% slope; runoff flow rate of 108 ml/sec/linear m (0.52 gpm/linear ft); and mean runoff volume of 230 L/m2 (6.3 g/ft2).

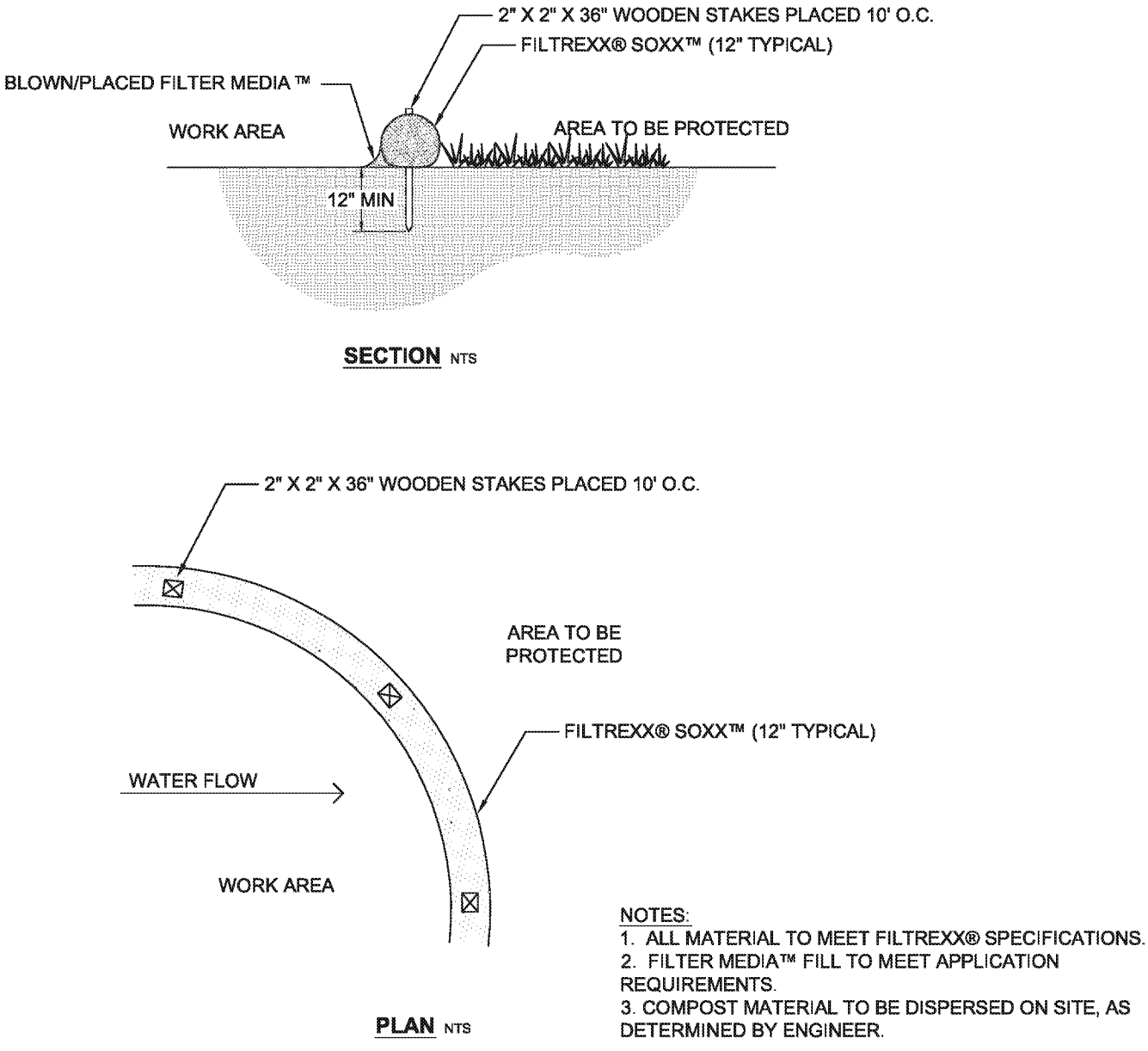
** Functional Longevity is dependent on UV exposure, freeze/thaw frequency, region of US/Canada, runoff-sediment frequency/duration/loading, and adherence to specified maintenance requirement.

*** Sediment Storage Capacity = sediment accumulation behind (directly upslope) + within the device.

^ Based on manure treated soils where bare soil control exhibited an average MPN for total coliform = 2.02X108/100 mL, E. coli. = 1.72X108/100 mL, Enterococcus = 1.43X106/100 mL .

Based on average runoff-sediment concentrations on 2500 mg/L on a silt loam soil.

Figure 1.1. Engineering Design Drawing for Sediment Control



FILTREXX® SEDIMENT CONTROL

NTS

Figure 1.2. Maximum Slope Lengths of Filtrexx® Sediment Control Based on a 1 in (25 mm)/24 hr Rainfall Event.

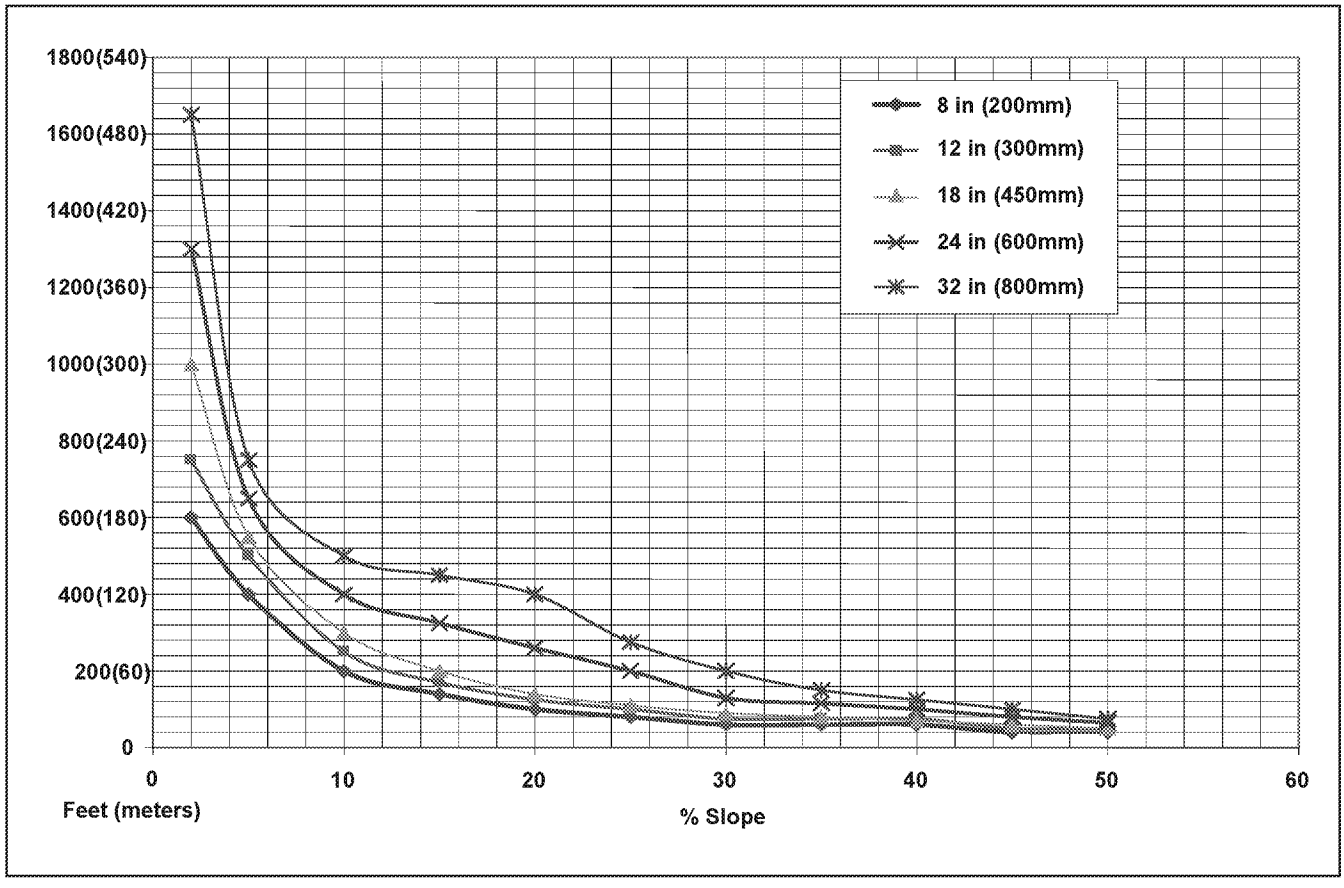


Table 1.3. Maximum Slope Lengths for Filtrexx® Sediment Control Based on a 1 in (25 mm)/24 hr Rainfall Event.

Slope Percent	Maximum Slope Length Above Sediment Control in Feet (meters)*				
	8 in (200 mm) Sediment control	12 in (300 mm) Sediment control	18 in (450 mm) Sediment control	24 in (600mm) Sediment control	32 in (800mm) Sediment control
	6.5 in (160 mm)**	9.5 in (240 mm) **	14.5 in (360 mm) **	19 in (480 mm) **	26 in (650 mm) **
2 (or less)	600 (180)	750 (225)	1000 (300)	1300 (400)	1650 (500)
5	400 (120)	500 (150)	550 (165)	650 (200)	750 (225)
10	200 (60)	250 (75)	300 (90)	400 (120)	500 (150)
15	140 (40)	170 (50)	200 (60)	325 (100)	450 (140)
20	100 (30)	125 (38)	140 (42)	260 (80)	400 (120)
25	80 (24)	100 (30)	110 (33)	200 (60)	275 (85)
30	60 (18)	75 (23)	90 (27)	130 (40)	200 (60)
35	60 (18)	75 (23)	80 (24)	115 (35)	150 (45)
40	60 (18)	75 (23)	80 (24)	100 (30)	125 (38)
45	40 (12)	50 (15)	60 (18)	80 (24)	100 (30)
50	40 (12)	50 (15)	55 (17)	65 (20)	75 (23)

* Based on a failure point of 36 in (0.9 m) super silt fence (wire reinforced) at 1000 ft (303 m) of slope, watershed width equivalent to receiving length of sediment control device, 1 in/ 24 hr (25 mm/24 hr) rain event.

** Effective height of Sediment control after installation and with constant head from runoff as determined by Ohio State University.

Table. 1.4. Maximum Slope Lengths for Filtrexx® Sediment Control Based on a 2 in (50 mm)/24 hr Rainfall Event.

Slope Percent	Maximum Slope Length Above Sediment Control in Feet (meters)*				
	8 in (200 mm) Sediment control	12 in (300 mm) Sediment control	18 in (450 mm) Sediment control	24 in (600mm) Sediment control	32 in (800mm) Sediment control
	6.5 in (160 mm) **	9.5 in (240 mm) ***	14.5 in (360 mm) **	19 in (480 mm) ***	26 in (650 mm) ***
2 (or less)	300 (90)	375 (110)	500 (150)	650 (200)	850 (260)
5	200 (60)	250 (75)	275 (85)	325 (100)	400 (120)
10	100 (30)	125 (35)	150 (45)	200 (60)	275 (85)
15	70 (20)	85 (25)	100 (30)	160 (50)	225 (70)
20	50 (15)	65 (20)	70 (20)	130 (40)	180 (55)
25	40 (12)	50 (15)	55 (16)	100 (30)	150 (45)
30	30 (9)	40 (12)	45 (13)	65 (20)	100 (30)
35	30 (9)	40 (12)	45 (13)	55 (18)	75 (23)
40	30 (9)	40 (12)	45 (13)	50 (15)	60 (38)
45	20 (6)	25 (8)	30 (9)	40 (12)	50 (15)
50	20 (6)	25 (8)	30 (9)	35 (10)	40 (12)

* Based on a failure point of 36 in (0.9 m) super silt fence (wire reinforced) at 1000 ft (303 m) of slope, watershed width equivalent to receiving length of sediment control device, 2 in/ 24 hr (50 mm/24 hr) rain event.

** Effective height of Sediment control after installation and with constant head from runoff as determined by Ohio State University.

APPENDIX D

Training and SWPPP Revision Records

STORM WATER POLLUTION PREVENTION PLAN & MONITORING IMPLEMENTATION PLAN (SWPPP/MIP)

SWPPP/MIP REVISIONS

Per the requirements under Section X.B. of the new IGP for Order No. 2014-0057-DWQ, effective July 1st, 2015, a SWPPP revision is required whenever necessary:

i. if the revisions are necessary to improve SWPPP consistency with any applicable municipal, state, & federal requirements that pertain to the requirements in the IGP;
ii. whenever a Discharger's status changes due to an annual Numeric Action Level (NAL) exceedance (as discussed in Section XII of the IGP);
iii. if visual observation records indicate corrective actions and a SWPPP revision are necessary;
iv. if they are needed to address any physical or operational changes at the facility and/or changes to the existing Best Management Practices;
v. if the Discharger is directed to revise the SWPPP by the State Water Resources Control Board (SWRCB) or Regional Water Quality Control Board (RWQCB); and
vi. if a Discharger is requesting a suspension of monitoring activities, due to suspension of industrial activities for ten (10) or more consecutive calendar days at a remote and/or unstaffed site.

Review	Date	Brief Description of Update or Amendment Required	Name (Print)	Signature
1.	7/1/2015	New IGP	Van Madding	
2.	2/1/2017	TSS Level 1 Status Update	Van Madding	
3.	9/6/2018	TSS Baseline Status Update	Van Madding	
4.				
5.				
6.				
7.				

*The Discharger will need to certify and submit via SMARTS the revised SWPPP within 30 days whenever the SWPPP contains significant revision(s). With the exception of significant revisions, the Discharger is not required to certify and submit via SMARTS their SWPPP revisions more than once every three (3) months in the reporting year.

Annual Storm Water & SWPPP Training Record (Sign In Form)	Presented by:	
Date:	**Location:**	
Name (Please Print):	**Signature:**	**Title:**

Annual Storm Water & SWPPP Training Record (Sign In Form)	Presented by:	
Date:	**Location:**	
Name (Please Print):	**Signature:**	**Title:**

Topics Covered Include: Regulatory Background; NPDES and the General Permit for Storm Water Discharges Associated with Industrial Activities (Order 2014-0057-DWQ); Sources of Pollutants; 303d & TMDL; NOI/NOT; SWPPP and MIP requirements & review (maps, PPT, Chemical Inventory, material handling, erosion control, spill control, Best Management Practices, etc.); Preventing Authorized & Unauthorized Non-Storm Water discharges; Non-Structural BMPs; Structural BMPs; BMP maintenance; Monthly and Annual Inspections & Observations; Storm Water Sampling (proper techniques & handling, required analytes & bottles, pH meter calibration, Chain-of-Custody, etc.); Numeric Action Levels (NALs); Audits; and SMARTS reporting.

APPENDIX E

Observation and Inspection Forms

MONTHLY VISUAL OBSERVATION FORM

Drainage Area Inspection for BMPs & Authorized/Unauthorized Non-Storm Water Discharges

Facility: Avalon Wastewater Treatment Facility (AWTF) Date and Time of Inspection: _____

123 Pebbly Beach Road Observer Name(s): _____

Avalon, CA 90704 Observer Title(s): _____

Were prior, current, or potential **un**authorized NSWDs observed this month? **Yes** | **No** If Yes, describe the source, quantity, appearance, & corrective measures taken to prevent/eliminate them: _____

Were authorized NSWDs, or signs of previous authorized NSWDs, observed this month? **Yes** | **No** What is the source? _____

AUTHORIZED NSWD Description	MP-1 (Drain A)		MP-2 (Drain C)		Pollutant Source / Description (at the discharge point from the site)
Clear?	Yes	No	Yes	No	
Cloudy?	Yes	No	Yes	No	
Unusual Color?	Yes	No	Yes	No	
Staining or Residue?	Yes	No	Yes	No	
Oil Sheen?	Yes	No	Yes	No	
Unpleasant Odor?	Yes	No	Yes	No	
Floating Debris (ex. grass/trash)?	Yes	No	Yes	No	

Describe corrective measures taken or additional BMPs implemented to reduce/eliminate authorized NSWDs, reduce pollutants, and/or prevent them from flowing through industrial areas of the site: _____

Inspect the outdoor equipment, storage areas, and industrial activity areas. Are BMPs in place and in good condition? **Yes** | **No** If No, describe below

Additional comments: _____

Authorized Non-Storm Water Discharge may include irrigation runoff, atmospheric condensate (A/C) & clean water from the operation, maintenance or testing of potable water sources, but only if BMPs are used to reduce the NSWD, it is inspected to ensure it is clean as it leaves the site & it does not violate local codes or RWQCB Basin Plans. Unauthorized Non-Stormwater Discharges include spills of new/waste chemicals, dirty wash-water, trash juice runoff, etc. Unauthorized NSWDs should never flow offsite!

STORM WATER SAMPLE OBSERVATION FORM

Facility: Avalon Wastewater Treatment Facility (AWTF)
123 Pebbly Beach Road
Avalon, CA 90704

Date of Sample Collection: _____
Observer Name(s): _____
Observer Title(s): _____

Estimated Time Rainfall Started: _____
Estimated Rainfall Amount: _____ inches (fill out after storm ends)

THIS OBSERVATION SHOULD BE CONDUCTED WHEN STORM WATER DISCHARGE IS BEING SAMPLED FOR LABORATORY ANALYSIS					
Storm Water Discharge Observations	**MP-1**		**MP-2**		**Pollutant Source / Description of Problems and Corrections**
Est. time storm water discharge started:					
Was a storm water sample collected? If "No" describe the reason	Yes	No	Yes	No	
Time storm water sample collected:					<<Should match time used on Chain-of-Custody
Clear?	Yes	No	Yes	No	
Cloudy?	Yes	No	Yes	No	
Unusual Color?	Yes	No	Yes	No	
Oil or Oil Sheen?	Yes	No	Yes	No	
Unpleasant Odor?	Yes	No	Yes	No	
Floating Debris? (grass/trash?)	Yes	No	Yes	No	
Field Measured pH (within 15 minutes):					
pH measuring method (circle one): litmus paper	3-point calibrated pH meter	pH 4 =	pH 7 =	pH 10 =	

Describe any corrective measures that will be taken or additional BMPs required and their date of implementation: _____

Additional comments: _____

ANNUAL COMPREHENSIVE FACILITY COMPLIANCE INSPECTION

Inspect all Drainage Areas, BMPs, equipment used to implement BMPs, all industrial activity areas, and associated pollutant sources

Facility: Avalon Wastewater Treatment Facility (AWTF)
123 Pebbly Beach Road
Avalon, CA 90704

Date and Time of Inspection: _____
Observer Name(s): _____
Observer Title(s): _____

Were authorized NSWDs, or signs of previous authorized NSWDs, observed in Drainage Areas 1 or 2? Yes / No If Yes, list the source, if it flows through industrial areas, and describe the runoff appearance: _____

Were unauthorized NSWDs, or signs of previous unauthorized NSWDs, observed in Drainage Areas 1 or 2? Yes / No If Yes, list the source quantity, and describe the appearance: _____

Describe corrective measures and/or BMPs used to prevent unauthorized NSWDs and minimize/prevent authorized NSWDs: _____

Potential Pollutant Source/ Industrial Activity Area	Any BMPs not Implemented?	Are Additional BMPs Needed	Describe Deficiencies in BMPs or BMP implementation	Additional BMPs or Corrective Actions and their date(s) of implemention
	YES / NO	YES / NO		
	YES / NO	YES / NO		
	YES / NO	YES / NO		
	YES / NO	YES / NO		

ANNUAL COMPREHENSIVE FACILITY COMPLIANCE INSPECTION

Inspect all Drainage Areas, BMPs, equipment used to implement BMPs, all industrial activity areas, and associated pollutant sources

Potential Pollutant Source/ Industrial Activity Area	Any BMPs not Implemented?	Are Additional BMPs Needed	Describe Deficiencies in BMPs or BMP implementation	Additional BMPs or Corrective Actions and their date(s) of implemention
	YES / NO	YES / NO		
	YES / NO	YES / NO		
	YES / NO	YES / NO		
	YES / NO	YES / NO		
	YES / NO	YES / NO		
	YES / NO	YES / NO		

Describe any additional corrective measures and/or additional BMPs required: _____

_____

_____

APPENDIX F

Example Chain of Custody

ENTHALPHY ANALYTICAL, INC.		Chain of Custody Record		Turn Around Time (Rush by advanced notice only)								
931 W. Barkley Ave., Orange, CA 92868		Lab No:		Standard:		4 Day:		3 Day:				
Phone: (714) 771-9928 Fax: (714)771-9933		Page: 1 of 1		2 Day:		1 Day:		Same Day:				
Billing: Enthalpy - SoCal		**Matrix:** A = Air DW = Drinking Water		**Preservatives:** 1 = $Na_2S_2O_3$ 2 = HCl 3 = HNO_3								
c/o Montrose Environmental Group		FL = Food Liquid FS = Food Solid L = Liquid		4 = H_2SO_4 5 = NaOH 6 = Other (ice)								
1 Park Plaza, Suite 1000, Irvine, CA 92614		PP = Pure Product S = Solid SeaW = Sea Water										
		SW = Swab W = Water WP = Wipe O = Other										

CUSTOMER INFORMATION		PROJECT INFORMATION	
Company:	ES Engineering Services, LLC	Name:	Storm Water Monitoring
Report To:	Van Madding	Number:	Avalon Wastewater Treatment Facility
Email:	vmadding@es-online.com	P.O. #:	
Address:	123 Pebbly Beach Road	Address:	
	Avalon, CA 90704		
Phone:		Global ID:	
Fax:		Sampled By:	

	Sample ID	Sampling Date	Sampling Time	Matrix	Container No. / Size	Pres.	Total Suspended Solids (SM 2540D)	Oil & Grease (1664 HEM)	Analysis Request	Test Instructions / Comments
1	MP-1 (Storm Drain A)			W	2 x 1L	6/4				Please Report all detections down to MDL.
2	MP-2 (Storm Drain C)			W	2 x 1L	6/4				
3										
4										
5										
6										
7										
8										
9										
10										

	Signature	Print Name	Company / Title	Date / Time
[1] Relinquished By:				
[1] Received By:				
[2] Relinquished By:				
[2] Received By:				
[3] Relinquished By:				
[3] Received By:				

Spill ID: 848629	Region: 4
Spill Location: Pebbly Beach Lift Station Avalon California	Agency: Avalon City
WDID: 4SSO10349	Collection System: Avalon CS
Certifier: Bob Greenlaw	Certify on: 06/28/2018

1 - Spill Type:	Category 1
Version:	1
2 - Estimate Spill Volume:	
a - Estimated spill volume that reached a separate storm drain that flows to a surface water body:	0.0
b - Estimated spill volume recovered from the separate storm drain that flows to a surface water body? (Do not include water used for clean-up):	0.0
c - Estimated spill volume that reached a drainage channel that flows to a surface water body:	0.0
d - Estimated spill volume recovered from a drainage channel that flows to a surface water body:	0.0
e - Estimated spill volume discharged directly to a surface water body:	6975.0
f - Estimated spill volume recovered from surface water body:	0.0
g - Estimated spill volume discharged to land? (Includes discharges directly to land, and discharges to a storm drain system or drainage channel that flows to a storm water infiltration/retention structure, field, or other non-surface water location.):	90250.0
h - Estimated spill volume recovered from the discharge to land? (Do not include water used for clean-up):	90250.0

Estimated Total spill volume Reach Surface Water (a-b+c+e)	Estimated Total spill volume Reach Land (g)	Estimated Total spill volume Recovered (b+d+f+h)	Estimated Total spill volume (a+c+e+g)
6975.0	90250.0	90250.0	97225.0

3 - Did the spill discharge to a drainage channel and/or surface water?	Yes

4 - Did the spill reach a storm drainpipe that is not part of a combined sewer system?	No
5 - If spill reached a separate storm drainpipe, was all of the wastewater fully captured from the separate storm drain and returned to the sanitary sewer system?	Not Applicable - Spill did not reach a separate storm drainpipe
6 - Spill Location Name:	Pebbly Beach Lift Station Avalon California
7 - Latutude of Spill Location:	33.345556
8 - Longitude of Spill Location:	-118.324167
9 - County:	Los Angeles
10 - Regional Water Quality Control Board:	4
11 - Spill location description:	Pebbly Beach Lift Station - This is one of two lift station in the City of Avalon, California.
Spill Details:	
12 - Number Of appearance points:	1
13 - Spill appearance point:	Force Main
14 - Spill appearance point explanation:	
15 - Final spill destination:	Beach;Building or Structure;Combined Storm Drain (Combined CS only);Paved Surface;Surface Water;Unpaved surface
16 - Explanation of final spill destination:	
17 - Estimated spill start date/time:	05/31/2018 11:30
18 - Date and time sanitary sewer system agency was notified of or discovered spill:	05/31/2018 11:40
19 - Estimated Operator arrival date/time:	05/31/2018 11:40
20 - Estimated spill end date/time:	06/01/2018 04:00
21 - Spill cause:	Pipe Structural Problem/Failure
22 - Spill cause explanation:	
23 - Where did failure occur:	Force Main
24 - Explanation of Where Failure Occurred:	
25 - Was this spill associated with a storm event:	No
26 - Diameter of sewer pipe at the point of blockage or spill cause (if applicable):	12

27 - Material of sewer pipe at the point of blockage or spill cause (if applicable):	CIP
28 - Estimated age of sewer pipe at the point of blockage or spill cause (if applicable):	45
29 - Spill response activities:	Cleaned-Up;Mitigated Effects of Spill;Contained all or portion of spill;Returned Portion of Spill to Sanitary Sewer System;Other Enforcement Agency Notified
30 - Explanation of spill response activities::	
31 - Spill response completion date:	06/05/2018 05:00
32 - Spill corrective action taken:	Plan rehabilitation or replacement of sewer;Repaired Facilities or Replaced Defect
33 - Explanation of spill corrective action taken:	
34a - Is there an ongoing investigation?	No
34b - Reason for ongoing investigation?	
35 - Visual inspection results from impacted receiving water:	City biological tests showed elevated coliforms for a few hours.
36 - Health warnings posted:	Yes
37 - Did the spill impact a beach (If YES, answer questions 38)?	Yes
38 - Name of impacted beach(es) (enter NA if None)	Avalon Bay Beaches and Pebbly Beach
39 - Name of impacted surface water(s) (enter Un-named Tributary to XXXXX where XXXXX is the name of first named downstream tributary if receiving surface water body is un-named):	Pacific Ocean
40 - Water quality samples analyzed for:	Biological indicator(s) - specify below
41 - Explanation of water quality samples analyzed for:	Coliforms
42 - Water quality sample results reported To:	County Health Agency
43 - Explanation of water quality sample results reported to:	
44 - Explanation of volume estimation methods used:	Mathematical calculations based on average flow rates for month and day of year.
45 - Cal OES Control Number:	18-3529
46 - Cal OES Called Date/Time:	05/31/2018 01:30

47(a) - Name and Tittle (Contact person who can answer specific questions about this SSO):	Bob Greenlaw
47(b) - Contact Person Phone Numner:	3105703025

Spill ID: 849780	Region: 4
Spill Location: AVALON	Agency: Avalon City
WDID: 4SSO10349	Collection System: Avalon CS
Certifier: Van Madding	Certify on: 09/06/2018

1 - Spill Type:	Category 3
Version:	1
2 - Estimate Spill Volume:	
a - Estimated spill volume that reached a separate storm drain that flows to a surface water body:	0.0
b - Estimated spill volume recovered from the separate storm drain that flows to a surface water body? (Do not include water used for clean-up):	0.0
c - Estimated spill volume that reached a drainage channel that flows to a surface water body:	0.0
d - Estimated spill volume recovered from a drainage channel that flows to a surface water body:	0.0
e - Estimated spill volume discharged directly to a surface water body:	0.0
f - Estimated spill volume recovered from surface water body:	0.0
g - Estimated spill volume discharged to land? (Includes discharges directly to land, and discharges to a storm drain system or drainage channel that flows to a storm water infiltration/retention structure, field, or other non-surface water location.):	600.0
h - Estimated spill volume recovered from the discharge to land? (Do not include water used for clean-up):	600.0

Estimated Total spill volume Reach Surface Water (a-b+c+e)	Estimated Total spill volume Reach Land (g)	Estimated Total spill volume Recovered (b+d+f+h)	Estimated Total spill volume (a+c+e+g)
0.0	600.0	600.0	600.0

3 - Did the spill discharge to a drainage channel and/or surface water?	No
4 - Did the spill reach a storm drainpipe that is not part of a combined sewer system?	No

5 - If spill reached a separate storm drainpipe, was all of the wastewater fully captured from the separate storm drain and returned to the sanitary sewer system?	Not Applicable - Spill did not reach a separate storm drainpipe
6 - Spill Location Name:	AVALON
7 - Latutude of Spill Location:	33.337222
8 - Longitude of Spill Location:	-118.308056
9 - County:	Los Angeles
10 - Regional Water Quality Control Board:	4
11 - Spill location description:	Pebbly Beach Lift Station
Spill Details:	
12 - Number Of appearance points:	1
13 - Spill appearance point:	Pump station
14 - Spill appearance point explanation:	
15 - Final spill destination:	Street/Curb and Gutter
16 - Explanation of final spill destination:	
17 - Estimated spill start date/time:	07/15/2018 10:00
18 - Date and time sanitary sewer system agency was notified of or discovered spill:	07/15/2018 11:30
19 - Estimated Operator arrival date/time:	07/15/2018 10:15
20 - Estimated spill end date/time:	07/15/2018 10:20
21 - Spill cause:	Operator Error
22 - Spill cause explanation:	
23 - Where did failure occur:	Other (specify below)
24 - Explanation of Where Failure Occurred:	Operator started a bypass pump which had the discharge hose disconnected resulting in an SSO when the pump pulled a prime from manhole adjacent to the Pebbly Beach Lift Station.
25 - Was this spill associated with a storm event:	No
26 - Diameter of sewer pipe at the point of blockage or spill cause (if applicable):	6
27 - Material of sewer pipe at the point of blockage or spill cause (if applicable):	Flex Hose
28 - Estimated age of sewer pipe at the point of blockage or spill cause (if applicable):	1

29 - Explanation of volume estimation methods used:	Based on the amount recovered with Vactor truck and hauled to nearby wastewater treatment plant.
30(a) - Name and Tittle (Contact person who can answer specific questions about this SSO):	Joe McKinzie
30(b) - Contact Person Phone Numner:	3105100731